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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,444	12/20/2004	Wataru Matsumoto	2611-0228PUS1	7790

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

RIZK, SAMIR WADIE

ART UNIT PAPER NUMBER

2133

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/518,444	Applicant(s) MATSUMOTO, WATARU	
	Examiner Sam Rizk	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

- Response to the applicant's amendment dated 8/8/2006
- Amended claims 1-12 have been submitted for examination
- Amended claims 1-12 have been rejected

### ***Specification***

1. In view of the applicant-amended specification, see pages 3-6, filed on 8/8/2006 all objections to the specification are withdrawn.
2. In view of the applicant amended claims 7 and 12, filed on 8/8/2006, all objections to the claims 7 and 12 are withdrawn.

### ***Drawings Objections***

3. In view of the applicant amended drawings filed on 8/8/2006, all objections to the drawings are withdrawn.

### ***Double Patenting***

4. In view of the applicant cancelled claims 1-10 of copending application no. 10/482,815, all double patenting rejection of claims 1,2,7,11 and 12 are withdrawn.
5. On further examination, new double patent rejection with patent no. 7,089,479 issued to same assignee with the instant application.

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151

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U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

6. Claims 1,2,7,11 and 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 7,089,479. Although the conflicting claims are not identical, they are not patentably distinct from each other.

6. Claims 1,2,7,11 and 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 7,089,479. Although the conflicting claims are not identical, they are not patentably distinct from each other.

7. Claims 1,2,7,11 and 12 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-12 of copending Application No. 10/520,061.

This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Bond et al. publication titled, low density Parity Check Codes based on Sparse Matrices with no Small Cycles, Cryptography and coding, 1997, pages 46-58, (Hereinafter Bond), (copy is provided in its entirety).
9. In regard to claim 1, Bond teaches;
  - (Original) A method of generating a check matrix for a low-density parity-check code in which at least one of weights of a column and a row are not uniform, the method comprising:
  - determining a code length and a coding rate;
  - determining the weights of the row and the column to determine a basic matrix that satisfies conditions that "the weights of the row and

the column are constant" and "number of cycles is equal to or more than six";

- selecting a maximum value of the weight of the column that satisfies a condition of " $2 < \text{maximum value of the weight of the column} \leq \text{number of 1s within columns in the basic matrix}$ ";
- searching provisionally an ensemble of the weights of the row and the column weights of the low-density parity-check code via optimization based on Gaussian approximation in a state that number of the weights of the row are limited to continuous two kinds to determine an optimum set of the weights of the row;
- deleting the rows sequentially from a bottom of the basic matrix considering number of rows after a division;
- searching provisionally an ensemble of the weights of the row and the column of the low-density parity-check code via optimization based on Gaussian approximation, using the set of the weights of the row as a fixed parameter, to determine an optimum set of the weights of the column;
- searching an optimal ensemble of the weights of the row and the column of the low-density parity-check code via optimization based on Gaussian approximation, using the set of the weights of the row and the column as a fixed parameter; and

- dividing at random the weights of the row and the column of the basic matrix after deleting the rows in a predetermined procedure based on a final ensemble.

(Note: Section 2.1, pages 48-50 in Bond)

10. Claim 2 is rejected for the same reasons as per claim 1.

11. In regard to claim 3, Bond teaches:

- (Original) The method according to claim 2, wherein the specific relational equation used at the rearranging is generated such that the weights within the matrix are arranged at a higher position within columns.

(Note: MATLAB routine, page 48 in Bond)

12. In regard to claim 4, Bond teaches:

- (Original) The method according to claim 2, wherein in the Gaussian approximation, the optimal ensemble of the weights of the row and the column, which minimizes a threshold, is searched in a single linear programming such that a Gaussian noise becomes maximum in a state that the coding rate is fixed.

(Note: Section 4, experimental results, page 53 in Bond)

13. In regard to claim 5, Bond teaches:

- (Original) The method according to claim 2, wherein at the searching the optimum ensemble of the row and the column of the low-density parity-check code, a weight distribution in the ensemble is adjusted

such that a total number of the weights in weight unit is equal to an integer and a sum of the total number of the weights in the weight unit is equal to a total number of 1 s in the Euclidean geometry code, and at the dividing, the dividing is performed based on the ensemble after an adjustment.

(Note: Section 2.2, the general case , pages (50-53), in Bond)

14. In regard to claim 5, Bond teaches:

- (Original) The method according to claim 2, wherein at the dividing, a Latin square of basic random sequence is generated, and a weight of 1 is extracted from each of the rows and each of the columns in the basic matrix after deleting the row, thereby dividing each of the rows and each of the columns at random based on the Latin square.

(Note: Section 2.2, the general case , pages (50-53), in Bond)

15. Claim 7, 8, 11 and 12 are rejected for the same reasons as in claim 1.
16. Claim 9 is rejected for the same reasons as per claim 5.
17. Claim 10 is rejected for the same reasons as per claim 6.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone



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number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

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*Res*  
*11/3/06*

ALBERT DECADY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2108